User's Manual

for

Thermal Receipt Printer

TM200 USER'S MANUAL

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Introduction

TM200 series printers are high-quality POS printers, and design for use with electronic instruments such as system ECR, POS, banking equipment, computer peripheral equipments.

The printers have the following features:

Printing

- High-speed printing: 180 mm/sec, 60 lines /sec maximum.
- Low-noise thermal printing.

Application Software

- Command protocol is based on the ESC / POS® standard.
- Various layouts are possible by using page mode.
- Characters can be scaled up to 4 times as large as standard size.
- Bar code printing is possible by using a bar code command. i.e. Bar codes can be printed both in vertical direction, and in the horizontal direction.
- Repeated operations and copy printing are possible by using macro definitions.
- Character font size (12 x 24 font or 9 x 17 font) can be selected using a command.

Printer Handling

- Easy drop-in paper roll loading
- An auto-cutter is standard
- Support “partial” and “full” cutter.
- Printer allows easy maintenance for tasks such as head cleaning
- Three different print densities can be selected by DIP switches.
- The built-in interface provides control capability for two drawers.
- Interface: RS-232, Parallel Port, USB interface.

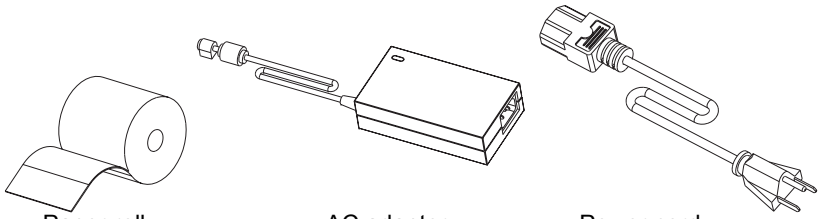
Options and Accessories

- TM200 power supply unit
- Communication cable
- RS-232 interface board
- Parallel interface board
- USB interface board
- Standard cable cover set (included wall mounting bracket)
- Top waterproof cover
- Thermal paper reel

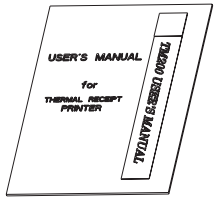
Chapter 1. Setting Up the Printer

Unpacking

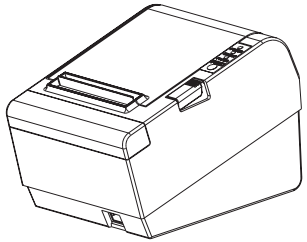
The illustration below shows the items should included for the standard of TM200 printer package. If any items are damaged or missing, please contact with your dealer for assistance.



Paper roll AC adapter Power cord



User’s manual

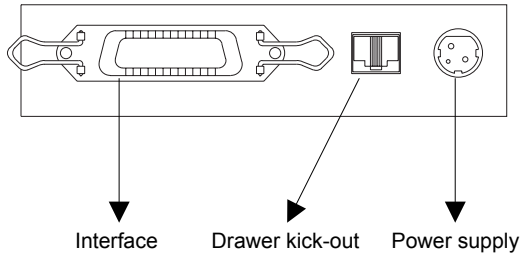


Printer

Communication cable Windows driver

Connecting the Cables

You can connect up to three cables to the printer. They all connect to the connector panel on the back of the printer, which is shown below:



Notes:

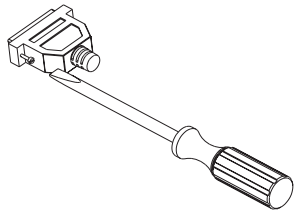
There is a caution label above the drawer kick-out connector.
Depending on the interface installed, the interface connector on your printer may look different from the one illustrated.

Before connecting any of the cables, make sure that both the printer and the computer are turned off.

Connecting the computer

You need an appropriate interface cable.

1. Plug the cable connector securely into the printer's interface connector.
2. If the printer has a serial interface, tighten the screws on both sides of the cable connector.



If the printer has a parallel interface, squeeze the wire clip on the printer together until they lock in place on both sides of the connector.

3. Attach the other end of the cable to the computer.

Connecting the drawer

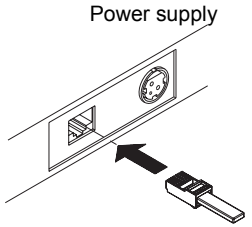
WARNING:

✧ *Use a drawer that matches the printer specification. Using an improper drawer may damage the drawer as well as the printer.*

CAUTION:

✧ *Do not connect a telephone line to the drawer kick-out connector; otherwise the printer and the telephone line may be damaged.*

Plug the drawer cable into the drawer kick-out connector on the back of the printer next to the power supply connector.



Connecting the Power Supply

WARNING:

✧ *Make sure that you use the optional +24V power supply or equivalent for your printer. Using an incorrect power supply may caused fire or electrical shock.*

CAUTION:

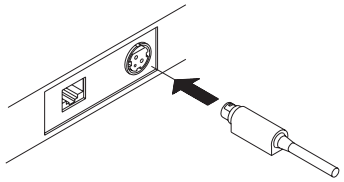
✧ *When connecting or disconnecting the power supply from the printer, make sure that the power supply is not plugged into an electrical outlet. Otherwise you may damage the power supply or the printer.*

✧ *If the power supply's rated voltage and your outlet's voltage do not match, contact your dealer for assistance. Do not plug in the power cord. Otherwise, you may damage the power supply or the printer.*

1. Make sure that the printer's power switch is turned off, and the power supply's power cord is unplugged from the electrical outlet.

2. Check the label on the power supply to make sure that the voltage required by the power supply matches that of your electrical outlet.

3. Plug in the power supply's cable as shown below. Notice that the flat side of the plug faces down.



Notes:

To remove the DC cable connector, make sure that the power supply's power cord is unplugged; then grasp the connector at the arrow and pull it straight out.

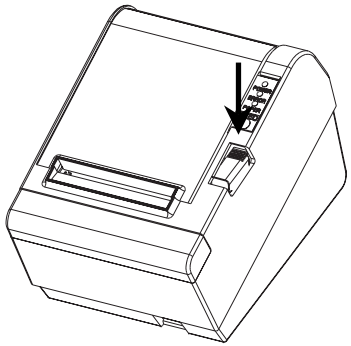
Installing or Replacing the Paper Roll

Notes:

Be sure to use paper rolls that meet the specifications. Do not use paper rolls that have the paper glued to the core because the printer cannot detect the paper end correctly.

1. Make sure that the printer is not receiving data; otherwise, data may be lost.

2. Open the paper roll cover by pressing the cover-open button. If the cover-open button will not open the cover, see page 4-3 or 4-5 in Troubleshooting.

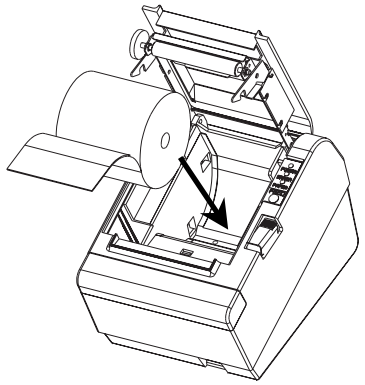


Notes:

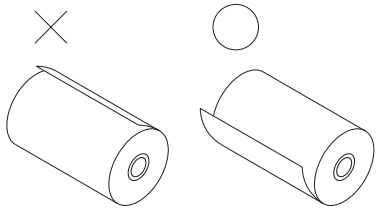
Do not open the print cover while the printer is operating. This may damage the printer.

3. Remove the used paper roll core if there is one.

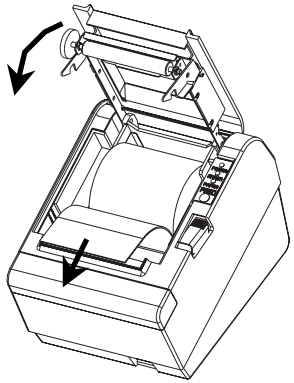
4. Insert the paper roll as shown.



5. Be sure to note the correct direction that the paper comes off the roll.



6. Pull out a small amount of paper, as shown. Then close the cover.



Adjustments and Settings

The TM200 Series are set up at the factory to be appropriate for almost all users. It does, however, offer some settings for users with special requirements.

It has DIP switches that allow you to change communication settings, such as handshaking and parity check, as well as print density.

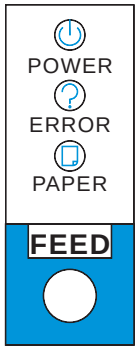
The TM200 Series also have a near-end sensor for the paper. This can give you a warning when the paper is almost out. If you find that there is not enough paper remaining on the roll when the near-end detector is triggered, you can change the near-end sensor setting.

See Appendix A if you need to make any of these changes.

Using the Printer

You can control the basic paper feeding operations of the printer with the button on the control panel. The indicator lights help you monitor the printer's status.

Control Panel



Button

The button can be disabled by the **ESC c 5** command.

Press the FEED button once to advance paper one line. You can also hold down the FEED button to feed paper continuously.

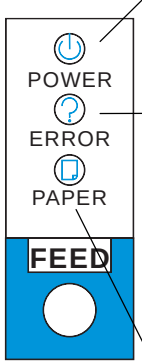
Panel lights

POWER
The POWER light is on whenever the printer is on.

ERROR
This indicates an error. See Chapter 4 for information on what to do when this light comes on.

PAPPER
This light indicates the near end of the paper roll. Install a new paper roll and the printer will continue printing.

Indicator on Control Panel



Status	*Description*
Power light “On”	Printer power is on.
Power light “Off”	Power cable is not connected with printer

Status	*Description*
ERROR light is “**On**” (**not blinking**), and heard beeper sound	Turn off the printer and check if cutter was seized.
ERROR light is ”**Blinking**“	Make sure that the printer cover is properly closed. Press the printer cover audibly clicks into place.
ERROR light is **Off**, but noting is printed	Try to run the self test to check that the printer works properly. See the self test instructions in Chapter 1.

Status	*Description*
PAPER light is “**On**“	There is a paper roll inside the printer.
PAPER “**Red**” light is “**On”**	The paper roll is near end.
PAPER “**Red**” light is “**Blinking**“	The paper roll is not installed or is at the end. Install a new paper roll. See Chapter 1 for instructions.
PAPER light is “**Off**“	If power is connected, and PAPER light still Off, please turn off power, and check if printer on programming mode.

Chapter 2. The self test

The self test lets you know if your printer is operating properly. It checks the control circuits, printer mechanisms, print quality, ROM version, and DIP switch settings.

This test is independent of any other equipment or software.

Running the self test

1. Make sure the printer is turned off and the printer covers are closed properly.

2. Make sure a paper roll has been installed properly.

3. While holding down the FEED button, turn on the printer using the switch on the front of the printer to begin the self test. The self test prints the printer settings, and then prints the following, cuts the paper, and pauses.

If you want to continue SELF-TEST
Please press the FEED button

4. Press the FEED button to continue printing. The printer prints a pattern using the built-in character set.

5. The self test automatically ends and cuts the paper after printing the following.

*** completed ***

Please re-start to exit SELF-TEST

Chapter 3. Reference Information

Printing Specifications

Printing method:	Thermal line printing
Dot density:	203 dpi x 203 dpi (8 dot/mm)
Printing direction:	Unidirectional with friction feed
Printing width:	72mm (2.83”), 576 dot positions
Characters per line (default):	48 (Font A) 64 (Font B)
Character spacing (default):	0.28 mm (0.1”) (2 dots) (Font A) 0.28mm (.01”) (2 dots) (Font B) Programmable by control command.
Printing speed -- High-speed mode:	180 mm / sec (approxi. 7.0” / sec) 60 lines / sec (computed value for 3.18mm (1/8”) feed) 28.4 lines / sec maximum (4.23 mm (1/6”) feed, at 24V, 28。C (82。F), density level 2)
Paper feeding speed:	Approximately 180 mm / sec (7.0”/sec) continuous paper feeding
Receive Buffer Size	80K Bytes
Number of characters:	Alphanumeric characters: 95 International characters: 32 Extended graphics: 128x7pages (including one space page) Traditional/ Simplified Chinese, Japanese, Kanji characters
Character structure:	Font A: 12 x 24 (including 2-dot spacing horizontally) Font B: 9 x 17 (including 2-dot spacing horizontally) Kanji: 24 x 24 Default font: Font A

	Standard		Double-height	
	W x H (mm)	CPL	W x H (mm)	CPL
Font A 12 x 24	1.23 x 2.97 (.05” x .11”)	48	1.23 x 5.92 (.05” x .24”)	48
Font B 9 x 17	0.87 x 2.10 (.035” x .08”)	64	0.87 x 4.20 (.035” x .17”)	64
Kanji 24 x 24	2.97 x 2.97 (.11” x .11”)	24	2.97 x 5.92 (.11” x .24”)	24

	Double-width		Double-weight/ Double-height	
	W x H (mm)	CPL	W x H (mm)	CPL
Font A 12 x 24	2.47 x 2.97 (.10” x .11”)	24	2.47 x5.92 (.10” x .24)	24
Font B 9 x 17	1.73 x 2.10 (.07” x .08”)	32	1.73 x 4.20 (.07” x .17”)	32
Kanji 24 x 24	5.92 x 2.97 (.24” x .11”)	12	5.92 x 5.92 (.24” x .24”)	12

* CPL = Characters Per Line

* Space between characters is not included

* Characters can be scaled up to 64 times as large as the standard sizes.

Paper Specifications

Paper roll (single-ply):	Size:	Width: 80.0mm±0.5mm (3.15” ± 0.02”)
	Maximum outside diameter:	83 mm (3.27”)
	Paper roll spool diameter:	Inside: 12mm (0.47”) Outside: 18mm (0.71”) Paper must not be pasted to the paper roll spool.
	Take up paper roll width:	80 ± 0.5 mm (3.15”±0.02”)

Electrical Characteristics

Supply voltage:	+24 VDC ± 7% (standard accessory power supply)	
Current consumption: (at 24V)	High-speed mode:	Mean: Approximately 1.7A Peak: Approximately 7.7A
	Low-power-consumption mode:	Mean: Approximately 1.2A Peak: Approximately 6.6A
	Standby	Mean: Approximately 0.2A

Reliability

Life:	Mechanism:	15,000,000 lines
	Thermal head:	100 million pulses, 50 km
	Auto cutter:	1,200,000 cuts
	(End of Life is defined to have reached the end of its life when it reaches the beginning of the Wear out Period.)	
MCBF:	52,000,000 lines	
	(This is an average failure interval based on failures relating to wear out and random failures up to the life of 15 million lines.)	

Environmental Conditions

Temperature:	Operating:	5℃ to 45℃ (41℉ to 113 ℉)
	Storage:	-10℃to 50℃ (14℉ to 122 ℉), except for paper
Humidity:	Operating:	10 to 90 % (RH)
	Storage:	10 to 90 % RH, except for paper

Chapter 4. Troubleshooting

This chapter gives solutions to some printer questions you may have.

General questions

※The lights on the control panel do not come on.

Make sure that the power supply cables are correctly plugged into the printer, the power unit, and to the power outlet.

Make sure that power is supplied to the power outlet. If the outlet is controlled by a switch or timer, use another outlet.

Printing questions

※The ERROR light is on (not blinking), and heard beeper sound but nothing is printed.

First, turn off the printer and check if cutter was seized.

If there is no cutter seized and the print head is not overheated, turn off the printer and turn it back on after about 10 seconds.

※The ERROR light is blinking.

Make sure that the printer cover is properly closed. Press the printer cover audibly clicks into place.
If the ERROR light is still flashing, contact a qualified service person.

※If the PAPER "Red" light is On.

The paper roll is at or near the end. Install a new paper roll. See Chapter 1 for instructions.

※If the PAPER "Red" light is blinking.

The paper roll is not installed or is at or near the end. Install a new paper roll. See Chapter 1 for instructions.

※The ERROR light is Off, but nothing is printed.

Try to run the self test to check that the printer works properly. See the self test instructions in Chapter 1 to run the self test. If the self test does not work, contact your dealer or a qualified service person.

If the self test works properly, check the following:

1. Check the connection at both ends of the interface cable between the printer and the computer. Also make sure that this cable meets the specifications for both the printer and the computer.
2. The data transmission settings may be different between the printer and computer. Make sure that the printer's DIP switch settings for data transmission are the same as the computer. You can print the printer's interface settings using the self test.

If the printer still does not print, contact your dealer or a qualified service person.

※Printing is poor.

Paper dust on the heating element of the thermal print head can lower the print quality. Try cleaning the print head as described below:

※Buzzers make beep sound.

Normal buzzers beep sound:
The buzzers can indicate the printer is completed print. It will beep sound after printer cut the paper to indicate the printing is finished.

Abnormal buzzers beep sound:
Cutter seized will make the buzzers beep sound. For this status, turn off the printer and check if cutter was seized.

If the printer not installed with interface board, it will make the buzzers beep sound. To make sure that the interface board is properly installed.

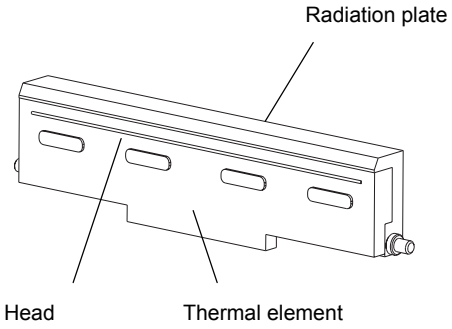
Note:

You may disable the buzzers function by changing DIP switch settings, "SW3" of pin 1, and 2 setting to "ON".

Cleaning the print head

CAUTION:
After printing, the print head can be very hot. Be careful not to touch it. Also let it cool before you clean it. Do not damage the print head by touching it with your fingers or any hard object.

1. Open the printer cover.
2. Clean the thermal element of the print head with a cotton swab moistened with alcohol solvent (ethanol, methanol, or IPA).



Paper handling questions

※ Paper is jammed inside the printer.

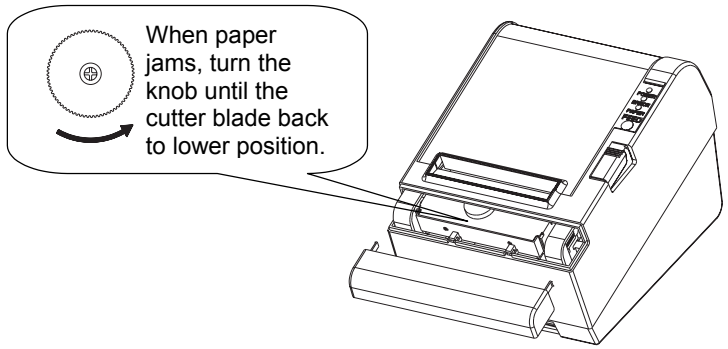
CAUTION:

Do not touch the print head because it can be very hot after printing continuously for a long time.

To clear a paper jam, follow the steps below:

1. Turn the printer off and press the cover open button to open the cover.
2. Remove the jammed paper and put the roll back in the printer and close the cover. (Take care not to touch the print head.)
3. If paper is caught in the automatic cutter and the printer cover cannot be opened, open the cutter cover as shown below.

4. Then turn the knob until you see cutter blade back to the lowest position, as shown in the illustration below. This returns the cutter blade to the normal position. Also notice that there is a label near the cutter to assist you.



5. Close the cutter cover.
6. Open the printer cover.
7. Remove the jammed paper.

Auto cutter questions

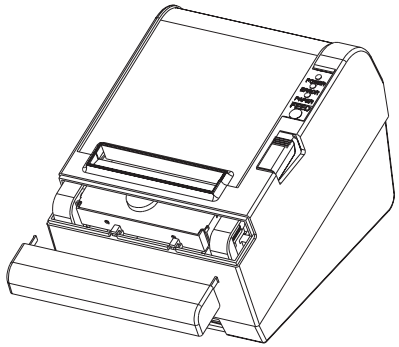
※ The auto cutter is jammed.

If a foreign object such as a push pin or paper clip drops in the auto cutter and causes the auto cutter to lock up, the printer enters an error state and begins the recovery operation automatically.

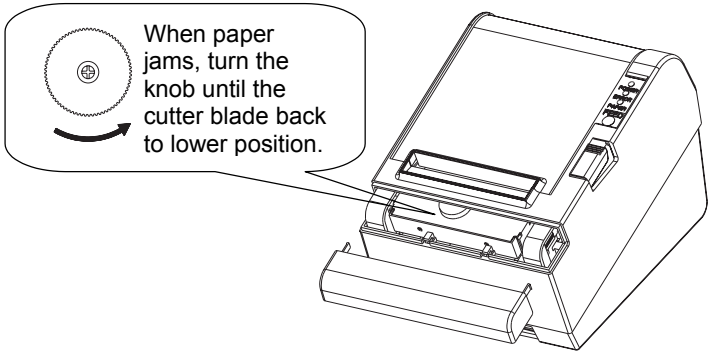
If the problem is not serious, the auto cutter returns to its normal position without any intervention by the user.

If the auto cutter does not return to its normal position by itself, follow the steps below to correct the problem:

1. Pull the cutter cover toward you so that you can rotate the cutter motor knob.



2. Following the instructions on the label, rotate the knob until the cutter blade draw back to normal position.



3. Close the cutter cover.

NOTE:
In case if you need disable auto cutter, just setting the DIP switch, SW1 of “1-5” pin to “ON”, and printer can use tear-bar for paper tear off.

Hexadecimal Dump

This feature allows experienced users to see exactly what data is coming to the printer. This can be useful in finding software problems. When you turn on the hex dump function, the printer prints all commands and other data in hexadecimal format along with a guide section to help you find specific commands.

To use the hex dump feature, follow these steps:

1. After you make sure that the printer is off, open the cover.

2. Hold down the FEED button while you turn on the printer.

3. Close the cover.

4. Run any software program that sends data to the printer. The printer prints “Hexadecimal Dump” and then all the codes it receives in a two-column format. The first column contains the hexadecimal codes and the second column gives the ASCII characters that correspond to the codes.

Hexadecimal Dump
1B 21 00 1B 26 02 40 40 ← ! ← & ☻ @ @
1B 25 01 1B 63 34 00 1B ←%☺← c 4 ←
41 42 43 44 45 43 47 48 ABCDEFGH

5. Close the cover and turn off the printer or reset it to turn off the hex dump mode. (or to terminate hex dump, press FEED button three times, and when you see

*** completed ***, the hex dump mode was turned off.

APPENDIXES

APPENDIX A

Dip Switch and Paper Near End Settings

Although the factory settings are best for almost all uses, if you have special requirements, you can change the DIP switch or paper near end settings.

Setting the DIP Switches

DIP switch functions

Your printer has three sets of DIP switches. The functions of the switches are shown in the following tables.

Serial interface specification

Set 1

SW	Function	ON	OFF
1-1	Print emulation	TM200	EPSON Emulation
1-2	Paper near end sensor	Vertical	Horizontal
1-3	Selects print density	Refer to page 'A-3" table	
1-4			
1-5	Cutter setting	Disable	Enable
1-6	Stop bit	2 bits	1 bit
1-7	Cutter mode	Full	Partial
1-8	Reserved: do not change settings	Fixed to OFF	

Set 2

SW	Function	ON	OFF
2-1	Data receive error	Ignored	Prints "?"
2-2	Receive buffer capacity	80K bytes	2K bytes
2-3	Handshaking	XON / XOFF	DTR / DSR
2-4	Data word length	7 bits	8 bits
2-5	Parity check	Enabled	Disabled
2-6	Parity selection	Even	Odd
2-7	Transmission speed (See the table below)		
2-8			

Transmission Speed

Transmission Speed (BPS) –bits per second	2 - 7	2 - 8
4800	OFF	ON
9600	ON	OFF
19200	OFF	OFF
38400	ON	ON

Set 3

SW	Function	ON	OFF
3-1	Buzzer1 setting	Disable	Enable
3-2	Buzzer 2 setting	Disable	Enable
3-3 ~ 3-8	Undefined	-	-

Print Density Selection

Print Density	SW 1-3	SW 1-4
1 Low power consumption mode	ON	ON
2 (Normal)	OFF	OFF
3	ON	OFF
4 (Dark)	OFF	ON

Notes:

- ✧ If the DIP switch setting is changed after the printer power is turned on, the change does not take effect until the printer is turned on again or is reset.
- ✧ DIP switches should not be changed while the printer power is on.

Parallel interface specification

Set 1

SW	Function	ON	OFF
1-1	Print emulation	TM200	EPSON Emulation
1-2	Paper near end sensor	Vertical	Horizontal
1-3	Selects print density	Refer to page “A-5” table	
1-4			
1-5	Cutter setting	Disable	Enable
1-6	Parallel port supports	EPP	SPP/EPP
1-7	Cutter mode	Full	Partial
1-8	Reserved: do not change settings	Fixed to OFF	

Set 2

SW	Function	ON	OFF
2-1	Auto line feed	Always enabled	Always disabled
2-2	Receive buffer capacity	2K bytes	80K bytes
2-3 ~ 2-8	Undefined	-	-

Set 3

SW	Function	ON	OFF
3-1	Buzzer1 setting	Disable	Enable
3-2	Buzzer 2 setting	Disable	Enable
3-3 ~ 3-8	Undefined	-	-

Print Density Selection

Print Density	SW 1-3	SW 1-4
1 Low power consumption mode	ON	ON
2 (Normal)	OFF	OFF
3	ON	OFF
4 (Dark)	OFF	ON

Notes:

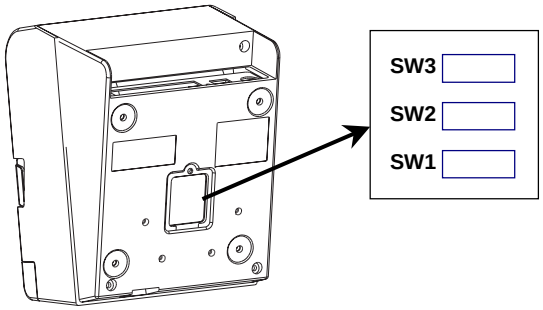
- ✧ If the DIP switch setting is changed after the printer power is turned on, the changed does not take effect until the printer is turned on again or is reset.
- ✧ DIP switches should not be changed while the printer power is on.

Changing the DIP switch settings

If you need to change settings, follow the steps below to make your changes:

CAUTION:
Turn off the printer while removing the DIP switch cover to prevent an electric short, which can damage the printer.

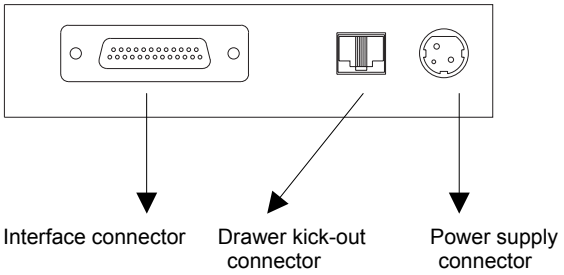
1. Make sure the printer is turned off.
2. Remove the screw from the DIP switch cover. Then take off the DIP switch cover, as sown in the illustration below.



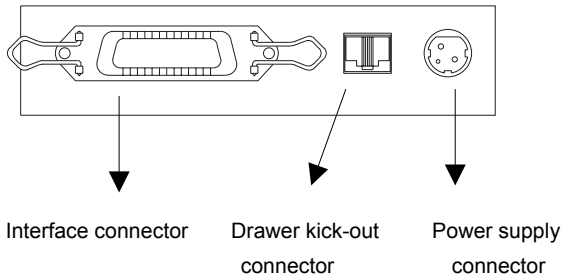
3. Set the switches using a pointed tool, such as tweezers or a small screwdriver.
4. Replace the DIP switch cover. Then secure it with the screw.

The new settings take effect when you turn on the printer.

APPENDIX B
Connectors



TM200 Connector (Serial interface)



TM200 Connector (Parallel Interface)

Interface Connector

Serial Interface (RS-232)

Pin No.	Signal name	Direction	Function
1	FG	-	Frame Ground
2	RxD	Input	Receive Data
3	TxD	Output	Transmit Data
6	DTR	Output	Data Terminal Ready
7	SG	-	Signal Ground
20	DSR	Input	Data Set Ready

Parallel Interface (IEEE-1284)

Pin No.	Source	Compatibility mode	Nibble Mode	Byte Mode
1	Host	nStrobe	HostClk	HostClk
2	Host / Printer	Data 0 (LSB)	-	Data 0(LSB)
3	Host / Printer	Data 1	-	Data 1
4	Host / Printer	Data 2	-	Data 2
5	Host / Printer	Data 3	-	Data 3
6	Host / Printer	Data 4	-	Data 4
7	Host / Printer	Data 5	-	Data 5
8	Host / Printer	Data 6	-	Data 6
9	Host / Printer	Data 7 (MSB)	-	Data 7 (MSB)
10	Printer	nAck	PtrClk	PtrClk
11	Printer	Busy	PtrBusy /Data3,7	PtrBusy
12	Printer	Perror	AckDataReq/ Data2,6	AckDataReq
13	Printer	Select	Xflag /Data1,5	Xflag
14	Host	nAutoFd	HostBusy	HostBusy
15		NC	NC	NC
16		GND	GND	GND
17		FG	FG	FG
18	Printer	Logic-H	Logic-H	Logic-H
19~30		GND	GND	GND
31	Host	nInit	nInit	nInit
32	Printer	nFault	nDataAvail/ Data0,4	nDataAvail
33		GND	ND	ND
34	Printer	DK_Status	ND	ND
35	Printer	+ 5V	ND	ND
36	Host	nSelectIn	1284-Active	1284-Active

Drawer Connector

Pin No.	Signal name	Direction
1	Frame ground	-
2	Drawer kick-out drive signal 1	Output
3	Drawer open/close signal	Input
4	+24V	-
5	Drawer kick-out drive signal 2	Output
6	Signal ground	-